

What is claimed is:

1. An apparatus for optical modulation, comprising:
a phase modulator configured to drive light with an
NRZI-coded drive signal for phase modulation; and

5 an intensity modulator to modulate the intensity of a
phase-modulated NRZI-coded optical signal received from said
phase modulator, with an operating point set such that the
output of said intensity-modulated optical signal is eliminated
when said NRZI-coded optical signal is not varied.

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2. The apparatus of claim 1 wherein:

said intensity modulator splits an optical signal
received from said phase modulator into a first optical signal
and a second optical signal and combines said first and second
15 optical signals for output; and

a phase difference between said first and second optical
signals is adjusted to set the operating point of said intensity
modulator.

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3. The apparatus of claim 2, wherein said intensity
modulator comprises a phase adjuster to adjust said phase
difference, between said first and second optical signals.

4. The apparatus of claim 2, further comprising a
25 temperature controller to control the temperature of said
intensity modulator, and adjust said phase difference.

5. The apparatus of claim 4 wherein:

said intensity modulator comprises a first output port

to output an intensity-modulated optical signal, and a second output port to output an optical signal complementary to an optical signal supplied to said first port; and

5 said temperature controller generates a temperature control signal based on an optical signal output by said second output port to control the temperature of said intensity modulator with said temperature control signal.

6. The apparatus of claim 2, further comprising a
10 frequency controller to control the frequency of light supplied to said phase modulator, and adjust said phase difference.

7. The apparatus of claim 6, wherein said frequency controller controls the temperature of an optical source of said
15 light to control the frequency of light.

8. The apparatus of claim 7 wherein:

 said intensity modulator comprises a first output port to output an intensity-modulated optical signal and a second
20 output port to output an optical signal complementary to an optical signal supplied to said first output port; and

 said frequency controller generates a temperature control signal based on an optical signal output by said second output port to control the temperature of said optical source
25 with said temperature control signal.

9. The apparatus of claim 2 wherein:

 said intensity modulator includes a first output port to output an intensity-modulated optical signal and a second

output port to output an optical signal complementary to an optical signal supplied to said first output port; and

the operating point of said intensity modulator is set so as to maximize the intensity of an optical signal output by
5 said second output port.

10. The apparatus of claim 1, further comprising an NRZ/NRZI converter to convert an NRZ-coded signal into said NRZI-coded signal.

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11. The apparatus of claim 1, further comprising an optical band-pass filter configured to narrow the spectrum of an optical signal output by said intensity modulator.

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12. The apparatus of claim 11, wherein said optical band-pass filter passes both modulated spectral sidebands of said optical signal.

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13. The apparatus of claim 11, wherein said optical band-pass filter passes one sideband of said modulated spectral sidebands of said optical signal more than the other sideband.

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14. The apparatus of claim 1, wherein said intensity modulator modulates the intensities of a plurality of phase-modulated NRZI-coded optical signals.

15. A method of optical modulation, comprising:
driving, at a phase modulator, light with an NRZI-coded drive signal for phase modulation;

modulating, at an intensity modulator, the intensity of a phase-modulated NRZI-coded optical signal received from said phase modulator; and

eliminating the output of an optical signal
5 intensity-modulated at said intensity modulator when said NRZI-coded optical signal is not varied.

16. The method of claim 15 wherein:

said phase-modulated optical signal is split into a
10 first optical signal and a second optical signal and said first and second optical signals are combined for output at said intensity modulator for intensity modulation; and

said eliminating the output of an optical signal
intensity-modulated is produced by adjusting the phase
15 difference between said first and second optical signals.

17. The method of claim 16, wherein said adjustment of phase difference is performed at a phase adjuster included in said intensity modulator.

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18. The method of claim 16, wherein said adjustment of phase difference is performed by controlling the temperature of said intensity modulator.

25 19. The method of claim 16, wherein said adjustment of phase difference is performed by controlling the frequency of light received at said phase modulator.

20. The method of claim 16 wherein:

at said intensity modulator, an intensity-modulated optical signal is supplied to a first output port and an optical signal complementary to an optical signal supplied to said first output port is supplied to a second output port; and

- 5 the eliminated output of said optical signal is produced by maximizing the intensity of an optical signal output by said second output port.